

REMARKS

The Office Action of May 25, 2006 has been received and its contents carefully considered.

The present Amendment revises independent claim 13 to recite that an etch stop layer is not formed in or under the interlayer insulating film. The Amendment also adds a new set of claims, 16-23, to further protect the invention. It is noted that steps (a)-(e) of independent claim 16 are supported by Figures 3E-3F of the present application's drawings. The "wherein" clause of independent claim 16 corresponds to "wherein" clause of claim 13.

The Office Action rejects the claims for anticipation by a published US application by Jiang et al. This reference will hereafter be called simply "Jiang" for the sake of convenient discussion. For the reasons discussed below, it is respectfully submitted that the independent claims now pending in this application are patentable over Jiang.

It is appropriate to begin by noting that the process flowchart shown in Jiang's Figures 1A and 1B is directed to a single damascene via, while the process flowchart shown in Figures 15A-15B is directed to a dual damascene process. An implementation of Jiang's first embodiment (single damascene via) is shown in Figures 2-14, and an implementation of Jiang's second embodiment (dual damascene process) is shown in Figure 16-21.

Section 3 of the Office Action refers to Jiang's second embodiment (dual damascene process) while discussing steps recited in claim 13 for forming various

structures, but resorts to Jiang's first embodiment (single damascene via) for the etching conditions recited in the first "wherein" clause of claim 1. Resorting to one embodiment disclosed in Jiang for some of the features recited in claim 1 and another embodiment for other feature is like mixing apples and oranges.

The present application discloses how to fabricate a dual damascene structure without an etching stop layer within or below an interlayer insulating film. It is respectfully submitted that comparing the etching conditions specified in claim 13 with Jiang's first embodiment is improper, because Jiang's first embodiment is directed to a single damascene via which lacks the "interconnection groove" of claim 13. Jiang uses an etching stop layer in his first embodiment (see, for example, Jiang's paragraph [0055], which refers to "an etch-stop layer 108"). The Jiang reference neither discloses nor suggests how to fabricate a dual damascene structure without using an etching stop layer.

Moreover, the first "wherein" clause with claim 13 recites O₂ gas, while Jiang uses N₂ instead of O₂ (see paragraph [0055]). Further more, the first "wherein" clause recites that the RF power is 600 watts or less, while Jiang uses 1200-1500 watts. [See Jiang's paragraph [0055]].

Turning now to new independent claim 16, it is again respectfully submitted that it would be inappropriate to rely on Jiang's second embodiment (dual damascene process) for the structural features recited in steps (a)-(e), and then to switch to Jiang's first embodiment (single damascene via) for the "wherein" clause of the claim. And even Jiang's second embodiment does not disclose the use O₂ gas and the RF power level recited in the "wherein" clause of claim 16.

The remaining claims depend from the independent claims discussed above and recite additional limitations to further define the invention, so they are patentable along with their independent claims and need not be further discussed.

For the foregoing, it is respectfully submitted that this application is now in condition for allowance. Reconsideration of the application is therefore respectfully requested.

Respectfully submitted,



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